Big Island Abalone: yesterday, today and tomorrow

by

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Big Island Abalone Corporation
Abalone around the World

• Farmed in: China, Korea, South Africa, Chile, Australia, Taiwan, U.S.A., Japan (spat), Thailand, New Zealand

• Initially harvested Algae from the wild

• Now increased use of farmed seaweed and pelleted feeds: sustainability becoming essential

• Pelleted feed formulas have improved tremendously
Global supply of abalone from all sources

Year
Metric tons
0 5000 10000 15000 20000 25000 30000 35000 40000 45000 50000
20370 22667 44510
Feeds: China
Feeds: South Africa
Big Island Abalone

- NELHA, Kailua-Kona, Big Island
- Started research 1997, sales in 2001
- *Haliotis discus hannai* (Ezo)
- 2003 Exporter of the year award
- 2011 Finalist Hawaii Business Innovation Showcase for APEC
- Last 2.5 years over doubled production: standing stock from 40T to over 100T (5.5 million abalone)
- Critical to secure good feed!
Feed Experiment (May 2010)

- Two sizes of abalone: 0.37g and 20g
- Combinations of 3 artificial feeds with 3 types of algae
- 4 Replicates per treatment
- Run for 7 months
- Look at FCR (feed consumed/body wt), cost, appearance, gonad index, stoutness index (weight/length), and market acceptance
Feed experiment: initial MEDIUM abalone growth/month (2 months)

<table>
<thead>
<tr>
<th>Feed combination</th>
<th>Lth (mm)</th>
<th>Wt (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DL</td>
<td>1.66</td>
<td>2.48</td>
</tr>
<tr>
<td>ND</td>
<td>1.53</td>
<td>2.61</td>
</tr>
<tr>
<td>AD</td>
<td>1.99</td>
<td>2.70</td>
</tr>
<tr>
<td>AAD</td>
<td>1.73</td>
<td>2.19</td>
</tr>
<tr>
<td>NU</td>
<td>1.48</td>
<td>2.03</td>
</tr>
<tr>
<td>AU</td>
<td>1.69</td>
<td>2.13</td>
</tr>
<tr>
<td>AAU</td>
<td>1.67</td>
<td>1.56</td>
</tr>
<tr>
<td>NL</td>
<td>0.97</td>
<td>0.70</td>
</tr>
<tr>
<td>AL</td>
<td>1.09</td>
<td>1.20</td>
</tr>
<tr>
<td>AAL</td>
<td>1.13</td>
<td>0.84</td>
</tr>
</tbody>
</table>
## Initial FCR abalone

Feed consumed (dry g) / body weight (wet g)

<table>
<thead>
<tr>
<th>FEED</th>
<th>DL</th>
<th>ND</th>
<th>AD</th>
<th>AAD</th>
<th>NU</th>
<th>AU</th>
<th>AAU</th>
<th>NL</th>
<th>AL</th>
<th>AAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>FCR (S)</td>
<td>0.83</td>
<td>0.55</td>
<td>0.52</td>
<td>0.61</td>
<td>1.01</td>
<td>0.91</td>
<td>1.07</td>
<td>2.33</td>
<td>2.11</td>
<td>2.24</td>
</tr>
<tr>
<td>FCR (M)</td>
<td>1.81</td>
<td>1.39</td>
<td>1.4</td>
<td>1.82</td>
<td>1.88</td>
<td>1.94</td>
<td>2.19</td>
<td>7.38</td>
<td>5.83</td>
<td>10.84</td>
</tr>
</tbody>
</table>
Feed costs

Cost of feeds:

1) Cultured Dulse: US$1.11 /kg
2) Imported Abfeed: US$ 2.51/kg
3) Imported Dried Laminaria: US$2.58/kg

- Most cost effective tested feed combination: Dulse and Abfeed
- Imported 12 tons of Abfeed from S.A.
Farm trial: Dec 2010

- Compare performance OI vs Abfeed
- 5 Treatments: A, A&D, OI, OI&D, D (control)
- For combination feeds: 4D art; 3D Dulse
- For pelleted feeds: 6D (3 times per week)
- Ran 7 months – limited space!
Abalone growth (g)/month

- A+D
- A
- OI+D
- OI
- D (CONTR)
% of Projected weight

- A+D
- A
- OI+D
- OI
- D (CONTR)
Conclusions

• The OI feed needs some work:
  • 1) Improve growth performance
  • 2) A more acceptable shell color
  • 3) Utilize co-products from the Biofuels or other Algae Industries
Thank you!